

# 2nd SEG/DGS Near - Surface Modeling and Imaging Workshop

Manama, Bahrain • 6 – 7 March 2016  
InterContinental Regency Bahrain



## EVENT PROGRAM



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## Technical Committee Members



### **Riyadh Al-Saad, Saudi Aramco, Chair**

Riyadh Al-Saad is currently a group leader of the near surface modeling unit with the Exploration Operations Department/Geophysical Data Processing Division of Saudi Aramco. My current roles and responsibilities range from supervision a group of 12 near surface modeler specialists and provide a technical consultation as required with a special focus on advancements in emerging technologies addressing the near-surface modelling and imaging challenges as surface wave inversion, FWI for shallow velocity model building, and non-seismic simultaneous joint inversion. He received his BSc degree in Geophysics from King Fahad University of Petroleum and Minerals, Dhahran, Saudi Arabia, in 1992 and soon after joined Saudi Aramco's Data Acquisition Division. Riyadh spent 8 months of

training with Western Geophysical in Houston, and returned to Saudi Aramco to work for a year in the Acquisition Division. Between 1994 and 2004 he is with the Processing Division. In 2005, Riyadh was assigned to Area Exploration Department/Regional Mapping Division for one year. Since 2006 and onward, he is working with the Geophysical Data Processing division. Between 2006 and 2013 Riyadh was part of the time processing production team where Riyadh was responsible for an integrated geology and geophysics workflow development addressing the limitation of the seismic data in wide variety of complex geological subsurface setting. He also worked on time of different acquisition schemes land, Transition Zone, OBC, and shallow and deep streamer marine datasets. Riyadh is a member of the Dhahran Geosciences Society, EAGE, AAPG and SEG. His areas of interest are seismic data processing, imaging and -3D survey design.



### **Ralph Bridle, Saudi Aramco, Cochair**

Ralph Bridle received his B.Sc. (Honors) in Mining and ACSM from Camborne School of Mines, Cornwall, England in 1979. From 1991 to the present, Ralph has been modeling the near-surface for Saudi Aramco. His principle interests are refraction statics and geostatistics, of which he has authored and co-authored papers in Geophysics, Geophysical Prospecting and Near-Surface Geophysics. He has presented papers at the annual conferences of SEG, EAGE and Geo.

He has served on many committees of the SEG and has received the award of SEG Life Membership for his services to SEG and Geophysics. Ralph has held various positions on executive committees of the Dhahran Geoscience Society and served as President.



### **Aqeel Ahmed, BAPCO**

Aqeel Ahmed is an established geophysicist with over 15 years of experience in the oil industry. Aqeel graduated from King Abdulaziz University in Jeddah with a Bachelor of Science in Applied Geology specializing in Geophysics. In 2010, Aqeel received his Master's degree, in Hydrogeology and Groundwater Management. Aqeel supervised and planned water wells and carried geophysical analyses to monitor water aquifers while working as a Geophysicist with the WaterResource Directorate of Bahrain. As a petroleum geophysicist, he gained valuable experience in the service sector working for Baker Hughes as VSP processing specialist. Aqeel joined Bapco in 2008 as an exploration geophysicist; he was involved with the acquisition, processing and interpretation of seismic and non-seismic geophysical methods. Currently, Aqeel is the Senior Geophysicist at Bapco, handling major national exploration projects and initiatives.



### **Mahmoud Hedefa, Saudi Aramco**

Mahmoud Hedefa is a talented geophysicist working with a variety of seismic data acquisition and processing systems for both offshore and onshore and specializing in -3D seismic imaging. His experience includes work in the Gulf of Mexico, Red Sea, Mediterranean Sea and the Arabian Gulf areas as a geophysical specialist in geophysical data processing. Currently Mahmoud serves as Technical Geophysical Advisor for Geophysics Job Family at UPDC "Upstream Professional Development center". Mahmoud completed developing an Advanced Seismic data processing in time domain course using Performance Based training approach. Mahmoud was honored as the Saudi Aramco's Outstanding Geophysicist in the 4th quarter of 2005 for his summation of "new simple wave

field separation technique" for processing transitional data used for offshore of Saudi Arabia. This technique has influenced methodology in the entire division for both processing and exploration. Mahmoud's refinement of MARINE OBC processing has proved for better summation technique. At Saudi Aramco, he was the leader to improve Multiple Elimination resulting in enhanced subsurface imaging and increased production. This technique is now used as a standard. He has published a multitude of papers of his recognized geophysical innovations. Additionally, Mahmoud Hedefa and Roy Burnstad has a patent in the United States on -3D seismic removal of residual water bottom multiples better known Goat "Ghost analysis and Termination". In 1988 Mahmoud Joined Tensor Geophysical in Cairo office, later after 3 years he joined onboard processing department with PGS where he was able to deliver the first full time migrated volume offshore EGYPT and GOM. He also developed and established many processing workflows in many different areas on the Globe, Offshore Egypt, UAE, GOM. He played a major role in establishing PGS processing center in Abu Dhabi in 1998 where he was able to trouble shoot the biggest OBC project in the Middle East at that time.



### **Mohammed Alhussain, Dhahran Geoscience Society**

Mohammed Alhussain has been working for Saudi Aramco as a Geophysicist for the past 15 years. He holds a BS degree in Geophysics from the University of Tulsa, USA. Mohammed received his Master of Science Degree in Geophysics in 2005 from Curtin University of Technology, Perth, Australia. He received a Ph.D degree in Geophysics in 2013 from the University of Texas at Austin. His main research interest is about seismic fracture characterization. Mohammed is a member of the Society of Exploration Geophysicist (SEG), European Association of Geoscientists and Engineers (EAGE) and the Society of Petroleum Engineers (SEP).



### **Abdulaziz Almuhaideb, Saudi Aramco**

Abdulaziz Almuhaideb is currently a Research Geophysicist at Saudi Aramco EXPEC Advanced Research Center. He started his career with Saudi Aramco in 2004 where he completed several assignments in prospect generation, seismic data acquisition and processing, well-site geology, and velocity-depth model building. Abdulaziz obtained a B.Sc. (Summa Cum Laude) from the University of Tulsa, a M.Sc. from the University of Texas at Austin, and a PhD from MIT, all in Geophysics. He has authored and co-authored numerous articles published in scientific journals and conference papers covering the areas of elastic wave modeling and imaging, near-surface scattering, signal processing, and reservoir characterization. Abdulaziz is the current Vice-President of Dhahran Geoscience Society (DGS), and he is an active member of SEG, AAPG, and SPE.



### **Abdullatif A. Al-Shuhail, KFUPM**

Abdullatif Al-Shuhail is an Associate Professor of Geophysics at King Fahd University of Petroleum & Minerals (KFUPM). He got his BS from KFUPM in Geophysics in 1988, his MS and PhD in Geophysics from Texas A&M University at College Station in 1993 and 1998, respectively. Since then he has been teaching and advising at KFUPM. He founded and directed the Near Surface Seismic Investigation Consortium at KFUPM in 2008-2006. He authored and co-authored several papers in the field of petroleum seismic exploration. He is a co-author of the book *Processing of Seismic Reflection Data Using MATLAB* published by Morgan & Claypool Publishers in 2011. He is an active member of the Society of Exploration Geophysicists, the European Association of Geoscientists & Engineers, and the Dhahran Geoscience Society. His interests include near-surface effects on petroleum seismic data, seismic investigation of fractured reservoirs, and ground penetrating radar.



### **Pier Paolo Bruno, Petroleum Institute**

Pier Paolo Bruno is currently an Associate Professor of Geophysics at the Petroleum Institute (PI) in Abu Dhabi. Up to 2014 he has been Research Geophysicist at "Istituto Nazionale di Geofisica e Vulcanologia", INGV in Italy. Dr. Bruno is an exploration geophysicist, specialized in high-resolution seismic imaging. His research activity has a solid focus on all aspects of exploration seismology: acquisition, processing and interpretation of reflection seismology data; seismic data inversion and integrated interpretation with other geophysical and geological data.

Pier Bruno has main research interests are the methodological improvements of high-resolution seismic imaging in complex geological settings. He applied seismic imaging to the study of active faults, geothermal resources and volcanic areas in Europe and USA. He published numerous articles in refereed journals and conference proceedings. He also delivered several presentations in international conferences. During 2014 Dr. Bruno was National coordinator of the Exploration Geophysics line of activity at INGV. Since 2011 he has been a reviewer for the Agency of Evaluation of Italian University and Research system (ANVIUR). Furthermore, he serves as a reviewer for reputable international journals in the area of geophysics and geology. Dr. Bruno has a ten-year long career as instructor of exploration seismology, data acquisition, and signal analysis at several Universities in Italy, Australia USA and UAE.



### **Sherif M. Hanafy, KAUST**

Sherif M. Hanafy is a senior research scientist at KAUST since 2009. He is in charge of the geophysical field program (Seismology Lab), teach "Geophysical Field Methods", in addition to his research in interferometry, traveltime tomography, early arrival tomography, data interpolation/extrapolation, and shallow application of resistivity and GPR methods.

He got his B.Sc. (1993) and Master (1996) from Cairo University, Egypt in Geophysics, then Ph.D. from university of Kiel, Germany in 2002. He worked as associate professor at Cairo University, Egypt from 2002 to 2007. In 2004 he got a one-year post-doc scholarship from Fulbright at University of Utah, in 2009 - 2007 he went back to Utah for the second time as a post-doc. In 2009 he moved to KAUST as a senior research scientist.

Dr. Hanafy is mainly interested in shallow application of geophysics for geological, engineering, environmental, and archaeological application. He uses several geophysical methods in his work including seismic, electric, and GPR methods.



#### **James Shorter, Petroleum Development Oman**

James Shorter is currently Senior Operations Geophysicist with Petroleum Development Oman, seconded from Shell. He graduated from University College London in 1992 with a B.Sc. in Exploration Geophysics. He started as a Processing and Acquisition Geophysicist with CGG, and then moved to Western Geophysical / WesternGeco where he worked in the Netherlands, Norway and Trinidad. He worked in the depth imaging and time processing departments as a Senior Geophysicist, Team Leader and Processing Supervisor. In 2006 he joined Shell as a Processing Supervisor and after postings in Netherlands and Libya, moved to Oman in 2011. After three years as the Team Lead for Signal Processing Jim moved to the Acquisition Department where he is currently supervising one of PDO's two seismic crews. Current areas of research include the joint inversion of seismic and non-seismic data and improving acquisition productivity.



#### **Jie Zhang, GOTECH**

Jie Zhang is a professor of geophysics and also President's Representative International Affairs at the University of Science and Technology of China (USTC). He received SEG Reginald Fessenden Award in 2012 and Outstanding Educator Award in 2015. He is ranked No. 1 among 2015 Most Creative People 100 in China by the US magazine Fast Company.



#### **E. Dianliang, BGP**

E Dianliang is chief geophysicist and deputy general manager of BGP ARABIA CO. LTD based in Dhahran, Saudi Arabia. He received a bachelor of Geophysics in 1996 from China Southwest Petroleum Institute and Master of Geophysics in 2007 from China Petroleum University. He has served BGP for 19 years since he started the job from BGP near surface modelling unit in 1996, then worked as data processing in 2000. He became field Chief geophysicist in 2004. Since then, he has acted a couple of managerial positions as production manager, party chief, operation supervisor, regional chief geophysicist, deputy general manager.

He is member of Society of Exploration Geophysicists (SEG), and European Association of Geoscientists and Engineers (EAGE)

E Dianliang's technical interests include near surface modelling, data processing, seismic field data acquisition, field operations, and Vibroseis.



### **Bashir Durrani, ARGAS**

Bashir Durrani received his M. Sc. (1983) in Geology from Pakistan, an M.S. (1989) in Physics from USA and Ph. D. (1993) in Geophysics from USA concentrating on earthquake seismology and crustal studies using seismic and non-seismic techniques. Bashir's Post-Doctoral research focused on evaluation as a potential site for commercial radioactive waste disposal site in a mined geologic repository.

Bashir has over 25 years of experience in the seismic industry and academia. His areas of interest include seismic data acquisition and processing, reservoir characterization, permanent reservoir monitoring, non-seismic techniques such as Gravity, Magnetic and Electrical Resistivity methods. Bashir has been based in Saudi Arabia since 2009 working for ARGAS first as Manager R&D and since June 2015 as Vice President - Business Development. In his recent experience in Al Khobar Bashir has been instrumental in building strong R&D relationship with clients in the GCC countries which has led to several mutually beneficial research projects. He has also built strong ties with IOC's in the region leading to excellent seismic acquisition, processing and reservoir characterization studies.



### **Chris Koeninger, Schlumberger**

After graduating with an MSc in Geophysics from Karlsruhe University in Germany, Chris Koeninger joined Western Geophysical in London in 1990 as a Research Geophysicist working on various data processing problems (mainly statics, time and depth migration). In 1998 he moved into operations initially as a data processing supervisor and later as Area Geophysicist and in various technical management positions for WesternGeco in Trinidad, USA, Egypt, India and the UK. In 2009 Chris attended a Post Graduate course at the Petroleum Institute of Heriot-Watt University in Edinburgh which he concluded with an MSc in Geoscience in 2010. In his current role as Schlumberger Geosolutions Technology Manager for the MEA region based in Dubai, Chris is responsible for providing technical solutions to client problems and supporting operations with the necessary tools to achieve the objectives. He is a member of EAGE and SEG.

### **Bassam Al Julaih, GEOTECH**

# Technical Program

All Technical Sessions, Coffee Breaks, and Lunches at the InterContinental Regency Bahrain

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## Sunday, 6 March

07:15 - 08:30	Onsite Registration
08:30 - 08:40	Hotel Safety Briefing
	Welcome by Committee Co-chairs
08:40 - 08:50	<b>Opening remarks by Mohamed Bannagi, DGS President</b>
08:50 - 09:00	<b>Opening Speech by John Branford, SEG President</b>

### Session 1

#### Near Surface Modelling

Session Chairs: Riyadh Al Saad & James Shorter

09:00 - 09:25	<b>Keynote: Tailoring near-surface modeling methods in Saudi Arabia</b> , Ralph Bridle, Saudi Aramco
09:25 - 09:50	<b>Keynote: The i-stats: An Image-Based Effective-Medium Modeling of Near-Surface Anomalies</b> , Oz Yilmaz, Anatolian Geophysical
09:50 - 10:15	<b>Keynote: Industry challenges in solving near surface problems: more physics with less data quality</b> , Andrey Bakulin, Saudi Aramco
10:15 - 10:35	<b>Near surface modeling: a multi-physics approach</b> , Chris Koeninger, Schlumberger GeoSolutions
10:35 - 10:55	<b>High-resolution images of the near-surface from surface-consistent prediction operators</b> , Matthieu Retailleau, CGG
10:55 - 11:10	<b>Coffee Break - 15 min</b>

### Session 2

#### Surface-wave Inversion

Session Chairs: Ralph Bridle & Bashir Durrani

11:10 - 11:35	<b>Keynote: Near-surface velocity estimation based on Rayleigh waves</b> , Li Peiming, BGP
11:35 - 11:55	<b>Advances in near-surface velocity model building</b> , James Shorter, PDO
11:55 - 12:15	<b>Building near-surface model with automated surface wave inversion in f-k domain</b> , Pavel Golikov, Saudi Aramco
12:15 - 13:00	<b>Discussion - 45 min</b> , Moderator: Gerard Schuster
13:00 - 14:00	<b>Lunch</b>

### Session 3

#### Seismic Methods (Refraction, Tomography, etc.)

Session Chairs: Mahmoud Hedefa & Abdullatif A. Al-Shuhail

14:00 - 14:25	<b>Keynote: Joint seismic traveltimes, waveform, and waveform envelope inversion</b> , Jie Zhang, GEOTOMO
14:25 - 14:45	<b>Locate Shallow Fault with Seismic and Resistivity Tomograms, S-wave tomogram and Surface Waves Common-offset Gathers</b> , Sherif M. Hanafy, KAUST
14:45 - 15:05	<b>Analysis of reduced traveltimes creates nonlinear delay time solution</b> , Ralph Bridle, Saudi Aramco
15:05 - 15:20	<b>Coffee Break - 15 min</b>
15:20 - 15:40	<b>A practical approach to improve the accuracy of travel time inversion</b> , Liu Liansheng, PanImaging Software Development Limited
15:40 - 16:00	<b>First Arrival Traveltime Tomography with Near Surface Model Constraints</b> , Ma Qingpo, BGP
16:00 - 16:20	<b>Application of the source-independent unwrapped phase inversion to land data</b> , Yunseok Choi, KAUST
16:20 - 17:00	<b>Discussion - 40 min</b> , Moderator: Oz Yilmaz
19:00 - 21:30	Ice Breaker Reception & Dinner at Elements Pool

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## Monday, 7 March

### Session 4

#### Non-seismic Methods

Session Chairs: E-Dianliang & Abdulaziz Almuheidib

08:30 - 08:55

**Keynote: Multigeophysics inversion: a maturing technology for enhancing seismic exploration,**  
Daniele Colombo, Saudi Aramco

08:55 - 09:15

**The improvement of near surface velocity modeling with Transient Electromagnetic data,**  
Yang Zhanjun, BGP

09:15 - 09:35

**Gravity Aided Velocity Modeling – The Importance of Timing in the Workflow,**  
Raffaella Sabetian, CGG

09:35 - 09:55

**Near Subsurface Geophysical Investigations in the Holy Mosque Expansion site, Makkah, Saudi Arabia,** Tahir Idris, Saudi Geophysical

09:55 - 10:10

**Coffee Break - 15 min**

10:10 - 10:30

**Joint Inversion of Gravity and GPR Data to Characterize Subsurface Cavities,**  
Abdullatif A. Al-Shuhail, KFUPM

10:30 - 10:50

**Airbone gravity gradiometry over a pinnacle reef in southern Ontario,** Raffaella Sabetian, CGG

10:50 - 11:40

**Discussion - 50 min,** Moderator: Daniele Colombo

11:40 - 12:40

**Lunch**

### Session 5

#### Emerging Technologies (FWI, Interferometry, Passive Seismic, etc.)

Session Chairs: Sherif Hanafy & Jie Zhang

12:40 - 13:05

**Keynote: Using full waveform inversion to delineate the near surface: opportunities and obstacles,** Tariq Al-Khalifah, KAUST

13:05 - 13:30

**Keynote: Full-waveform Modeling of Elastic Waves in Karstic media,** Yingcai Zheng, University of Houston

13:30 - 13:55

**Keynote: Can Seismic Interferometry Significantly Improve Geophysical Characterization of the Near-Surface?,** Gerard Schuster, KAUST

13:55 - 14:15

**Near surface Vs velocity model from Rayleigh waves: A robust workflow,** David Le Meur, CGG

14:15 - 14:30

**Coffee Break - 15 min**

14:30 - 14:50

**Geostatistically Unifying Long Wavelength Trends of Multiple 3D Seismic Surveys to the Regional 2D Model,** Abdulaziz Al-Saad, Saudi Aramco

14:50 - 15:10

**Comparing Isotropic and Anisotropic Ordinary Kriging of Uphole Velocity Models for Determining Static Corrections,** Hasan M. Ismail, Saudi Aramco

15:10 - 16:00

**Discussion & Wrap Up -50 min,** Moderator: Riyadh Al Saad & Ralph Bridle

16:10

Leaving from InterContinental for GEO 2016 Reception



## Keynote Speakers



### **Öz Yilmaz**

Oz Yilmaz received his B.S. in Geology with Geophysics Option from the University of Missouri-Rolla in 1970, M.S. in Geophysics with research in rock physics and earthquake seismology from Stanford University in 1972, and after five years in the industry, Ph.D. in Geophysics with research in exploration seismology from Stanford University in 1979. Aside from numerous publications on all aspects of seismic data analysis, Oz Yilmaz wrote three books published by SEG: *Seismic Data Processing* in 1987, expanded two-volume *Seismic Data Analysis* in 2001, and *Engineering Seismology* in 2015. He was the SEG Distinguished Lecturer in 1996 and SEG Distinguished Instructor in 2015.



### **Andrey Bakulin**

Andrey Bakulin is a geophysical consultant at Saudi Aramco's EXPEC Advanced Research Center in Dhahran. He holds a PhD in geophysics (1996) from St. Petersburg State University of Russia. Bakulin had a brief academic career at St. Petersburg State University and the Colorado School of Mines. His industrial career followed with work at Schlumberger Cambridge Research, Shell Bellaire Technology Center, and WesternGeco. Bakulin was involved in development of several technologies. He co-developed the Virtual Source Method. He contributed to practical methods of estimating anisotropy from seismic and well data as well as designing rock physics transforms to characterize fractures and 3D stresses from seismic anisotropy. He developed a method and system to monitor well completions with tube waves.

Currently he is leading near surface group in EXPEC ARC and implements seismic monitoring with buried receivers. He served SEG as Distinguished Lecturer and has received a variety of professional awards, including Honorable Mention and best presentation at an SEG Annual Meeting (twice), Honorable mention Best Paper in GEOPHYSICS (twice), the J. Clarence Karcher Award, and a 2007 E&P Special Meritorious Award for Engineering Innovation.



### **Peiming Li**

Peiming Li is a vice chief geophysicist of BGP. He joined BGP, China National Petroleum Corporation (CNPC) in 1989. He received his B.Sc. (1989), M.Sc. (1994) and Ph.D (2010) in Geophysics from Tongji University, Shanghai, China. He is a member of SEG and EAGE. Peiming Li has undertaken a wide variety of research in acquisition for 2D and 3D seismic survey, VSP, static corrections, and migration. He have developed some software for 2D FD time/depth migration, 3D one pass FD time/depth migration for complex topography and subsurface structures between 1998-1994. He was responsible for research and development of statics correction and KLSeis Seismic acquisition software approved by CNPC between 2000-1999 and win 1st award of

science and technology advancement of CNPC, and also was in charge of the development of the new generation KLSeis Seismic acquisition software (KLSeisl) between 2013-2010. He put forward the ideas of model-constrained 3D first break refraction statics and comprehensive statics with different methods, which better solved static problem in complex areas.



### **Daniele Colombo**

Daniele Colombo is a research geophysical consultant in the EXPEC Advanced Research Center of Saudi Aramco. Colombo has a track record of more than 20 year experience working in the O&G industry as a geophysicist involved in research. He received a M.Sc. (1991) and a Ph.D. (1994) degree in seismology from Milan University. After working as post-doc in the National Institute for Geophysics and Volcanology in Rome, he joined Geosystem S.r.L. in Milan where he specialized in electromagnetic software development, data analysis and interpretation, and micro-earthquake monitoring. From 1998 until 2005 he held the position of Technical and R&D manager for seismic imaging technology focusing on velocity model building in complex geology which included the development of joint inversion methods for quantitative

integration of seismic-EM-gravity. In 2007 he joined WesternGeco where he founded and managed the Structural Depth Imaging (SDI) group. In 2009 he joined the EXPEC Advanced Research Center of Saudi Aramco where he leads a team dedicated to the development of multi-physics technologies applied to hydrocarbon exploration and recovery. His research interests include seismic and electromagnetic imaging, and multi-parameter earth model building via joint inversion.



### **Tariq Al-Khalifah**

Tariq Al-Khalifah is a professor of geophysics in the division of Physical Sciences and Engineering at King Abdullah University for Science and Technology (KAUST). He assumed his duties there in June 2009. Prior to joining KAUST, Tariq was a research professor and director of the Oil and Gas Research Institute at King Abdulaziz City for Science & Technology (KACST). He has also been associate research professor, assistant research professor and research assistant at KACST. From 1996 to 1998, Tariq served as a postdoctoral researcher for the Stanford Exploration Project at Stanford University, USA. He received the J. Clarence Karcher Award from the Society of Exploration Geophysicists (SEG) in 1998 and the Conrad Schlumberger Award from the European Association for Geoscientists and Engineers (EAGE) in 2003. He is a member of SEG and EAGE. Tariq received his doctoral degree in geophysics (1997)

and master's degree (1993) in geophysical engineering from the Colorado School of Mines, USA. He holds a bachelor's degree (1988) in geophysics from King Fahd University of Petroleum and Minerals, Saudi Arabia. Tariq's research interests are in imaging, inversion and velocity model building for exploration seismic data with special emphasis on media that exhibit anisotropic behavior.



### **Yingcai Zheng**

Yingcai Zheng is an Assistant Professor in seismic imaging and reservoir characterization, in the Department of Earth and Atmospheric Sciences, at University of Houston. Prior to his joining University of Houston in 2014, he was a Postdoctoral Fellow and Research Scientist at Earth Resources Laboratory at Massachusetts Institute of Technology. He got his Ph.D. in Geophysics from University of California Santa Cruz in 2007 and B.S. degree (2001) also in Geophysics from Peking University, Beijing. For his research in near surface, he is working on methods to study elastic seismic wave propagation, scattering, and imaging in media containing karstic voids. In addition, he developed new seismic algorithms (double-beam method) to image subsurface fracture networks in fractured reservoirs and a new recursive waveform inversion scheme without the perturbation-based iteration but with unconditional convergence, called direct waveform inversion (DWI). He is a recipient of the SEG's 2015 Karcher Award for his contribution in exploration geophysics.



### **Gerard Schuster**

Gerard Schuster is currently a Professor of Geophysics at King Abdullah University Science and Technology (KAUST) and an adjunct Professor of Geophysics at University of Utah. He was the founder and director of the Utah Tomography and Modeling/Migration consortium from 1987 to 2009, and is now the co-director and founder of the Center for Fluid Modeling and Seismic Imaging at KAUST. Dr. Schuster helped pioneer seismic interferometry and its practical applications in applied geophysics, through his active research program and through his extensive publications, including his book "Seismic Interferometry" (Cambridge Press, 2009). He also has extensive experience in developing innovative migration and inversion methods for both exploration and earthquake seismology. Gerard has an MS (1982) and a PhD (1984) from Columbia University and was a postdoctoral researcher there

from 1985-1984. From 1985 to 2009 he was a professor of Geophysics at University of Utah. He left Utah to start his current position as Professor of Geophysics at KAUST in 2009. He received a number of teaching and research awards while at University of Utah. He was editor of GEOPHYSICS from 2005-2004 and was awarded SEG's Virgil Kauffman gold medal in 2010 for his work in seismic interferometry.



**Society of Exploration Geophysicists**  
*The international society of applied geophysics*

# SAVE *the* DATE

## SEG MIDDLE EAST UPCOMING EVENTS 2016

Event	Date	Location	Activity	Status
AAPG/EAGE/SEG/SPE The Knowledge Management Challenge	23-24 March 2016	<b>Abu Dhabi,</b> UAE	Workshop	Online Registration Open
D&P Forum: Characterization of Tight of Gas Reservoirs	18-19 April 2016	<b>Manana,</b> Bahrain	Forum	Online Registration Open
AAPG/SEG Advances in Subsurface Mapping	16-18 May 2016	<b>Muscat,</b> Oman	Workshop	Online Registration Open
Multi-Physics Imaging for Integrated Exploration and Field Development	4-6 October 2016	<b>Dubai,</b> UAE	Workshop	Save The Date
2nd Broadband Point Source Point Receiver	5-7 December 2016	<b>Kuwait City,</b> Kuwait	Workshop	Save The Date

Tel: 971 4 3724880 | Fax: 971 4 3724204 | [middleeast@seg.org](mailto:middleeast@seg.org) | [www.seg.org](http://www.seg.org)



## D&P FORUM: Characterization of Tight Reservoirs



Following the success of several workshops around the world, the SEG D&P Committee will hold a second workshop in the Middle East. The **Characterization of Tight Reservoirs Workshop** will be held **18-19 April 2016** in Bahrain, UAE, at the InterContinental Regency Bahrain.

Characterization of tight reservoirs is an important area of research due the potential economic impact of their exploitation. Because a large portion of the world's hydrocarbon reserves are trapped in tight reservoirs, technologies to characterize the facies variability and the prevalence of fractures (natural and hydraulically induced) is fundamental for effective reservoir management. Mapping and monitoring of fluid and fracture distribution deep inside tight reservoir is key to increase recovery and optimize production strategies.

This forum will focus on the state-of-the-art geophysical methods and workflows that can be applied to improve well performance and reserve estimates in tight reservoirs. Recent advances in wide azimuth 3D processing, elastic modeling, borehole geophysics, electromagnetics, micro-seismicity monitoring, time lapse methods and their integration with reservoir geology and petro physics, provides the opportunity for a step change in reservoir characterization and monitoring.

### TECHNICAL TOPICS:

- Challenges and Case Studies
- Fracture Characterization, Imaging and Monitoring
- Near Wellbore Formation Evaluation
- Deep Characterization Monitoring and Impact on Reservoir Management

### KEYNOTE SPEAKERS:

- Aria Abubakar, Schlumberger
- John R. Tinnin, Baker Hughes
- Mark Proett, Saudi Aramco
- Yu Gang, BGP

### REGISTRATION RATES

Early Bird Registration Rate (before 17 March) — US\$890

Late Registration Rate (after 17 March) — US\$990

All individuals wishing to participate in the workshop must register before attending.

Full payment must be received in order to attend.

### ORGANIZING COMMITTEE

Alberto F. Marsala (Co-chair), Saudi ARAMCO; Reynaldo Cardona (Co-Chair), Chevron; Martin J. Terrell, Exxon Mobil; Mariana Gherasim, BP; Ping Zhang, Schlumberger; Sami Eyuboglu, Halliburton; Thomas Koithan, Weatherford; Bill Lindsay, Baker Hughes; Stephen Hallinan, CGG; Mike Wilt, Groundmetrics; E. Dianliang, BGP; Andrea Lovatini, Schlumberger; Ahmed Al-Kaabi, ADMA

### Questions or more information contact:

Ozlem Kocak  
SEG Middle East  
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or +971 4 371 28 57

### MEETING SCHEDULE

**Monday, 18 April**  
*Registration, morning and afternoon sessions, and an Icebreaker*

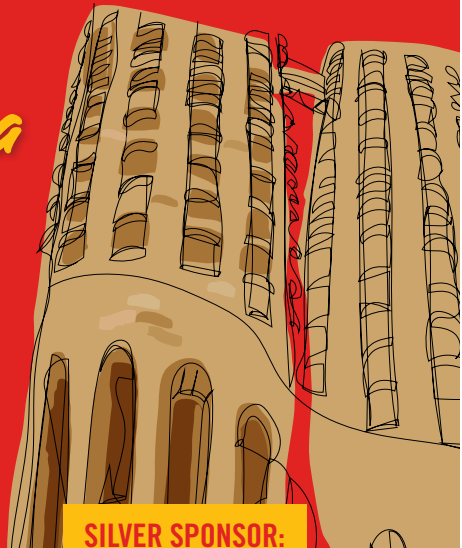
**Tuesday, 19 April**  
*Morning and afternoon sessions*

# ICE Barcelona

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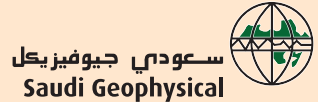
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